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HOV 1 3 TOOD JULY	TRANSMITTAL LETTER (General - Patent Pending)		Docket No. 51889/2
In Recapoling from Of: I	) uglas R. Hackler, Sr. et al.		
Serial No. 10/613,169	Filing Date July 3, 2003	Examiner Not yet ssigned	Group Art Unit 2811
Title: MULTI-CONFIC	GURABLE INDEPENDENTLY M	IULTI-GATED MOSFET	
	TO THE COMMISS	ONER FOR PATENTS:	
Transmitted herewith is:  Inf rmation Disclosure PTO-1449 with copies Postcard			
as described belo ☐ Charge tl ☐ Credit an	is required.  nount of is atta  ereby authorized to charge and cr		
John R. Thompson	Hompson Ignature	Dated: October <u> </u>	03

John R. Thompson Registration No. 40,842 STOEL RIVES LLP

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orOct. 31, 2003 with the U.S. Postal Service as first class mail under 37 C.F.R. 1.8 and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313, 1450.

Signature of Person Mailing Correspondence

John R. Thompson

Typed or Printed Name of Person Mailing Correspondence



PATENT APPLICATION Docket No.: 51889/2

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re applicat	ion of:				)
	Doug	glas R. H	ackler,	Sr. et al.	) ) }
Serial No.:	10/61	3,169			) Art Unit ) 2811
Filed:	July :	3, 2003			)
For:		TI-CON TI-GAT		RABLE INDEPENDENTLY OSFET	)
		INF	<u>ORMA</u>	TION DISCLOSURE STATEMENT UNDER 37 C.F.R § 1.97	
TO T	не со	MMISS	IONER	R FOR PATENTS:	
Pursu	ant to l	his (her)	(their)	duty of disclosure, applicant(s) enclo	ose(s) copies (a copy) of
the documen	t(s) list	ed on the	e accom	npanying Form PTO-1449.	
1. This	informa	ition disc	closure	statement is being submitted:	
	a.		applion nation on the	in three months of the filing date of the cation or within three months of the danal stage, or before the mailing date of the merits, whichever event occurs last. FR 1.97(e) is required.)	ate of entry of the first Office action
	b.			the period set forth in paragraph 1a, bof either a final action or a notice of al i.)	_
		i.		A \$180.00 information disclosure street fee set forth in 37 CFR 1.17(p) is er	
		ii.		A statement specified by 37 CFR 1. below.	.97(e) is set forth

		C.	Ш	After the mailing date of a final action or notice of allowance and on or before payment of an issue fee. A statement specified by 37 CFR 1.97(e) is set forth below. A petition requesting consideration of the information disclosure statement and the \$130.00 petition fee set forth in 37 CFR 1.17(i) are enclosed.
		d.		Concurrent with the filing of a Request for Continued Examination
2.		The a	attorney	or agent signing below hereby states that:
		a.		each item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement.
		b		no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the statement after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement.
3.		docu	` '	set forth below concise explanations of the relevance of each of in the English language and/or selected document(s) in the mage.
	DATE	ED this	s <u>31</u> d	lay of October, 2003.

Respectfully submitted,

Jøhn R. Thompson Registration No. 40,842

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U.S. PATENT	DOCU	MENTS	*	CRADEMARK OF			
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	1	2002/0187610 A1	12/12/02	Furukawa et al.	438	283	06/12/01
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Title: MULTI-CONFIGURABLE INDEPENI MULTI-GATED MOSFET			(	MOV 1 3 2003 U		FILING DATE- July 3, 2003			
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Sheet 3 of 7 FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE ATTY. DOCKET NO. APPLICATION NO. PATENT AND TRADEMARK OFFICE (REV. 7-80) 51889/2 US 10/613,169 INFORMATION DISCLOSURE CITATION APPLICANT - Douglas R. Hackler, Sr. et al. Title: MULTI-CONFIGURABLE INDEPENDENTLY MULTI-GATED MOSFET FILING DATE-July 3, 2003 Assaderaghi et al., "A Dynamic Threshold Voltage MOSFET (DTMOS) for Very Low Voltage Operation," 32 IEEE Electron Device Letters, Vol. 15, No. 12, December 1994, pgs. 510-512. Assaderaghi et al., "A Dynamic Threshold Voltage MOSFET (DTMOS) for Ultra-Low Voltage Operation," 33 Department of Electrical Engineering and Computer Science, University of California at Berkeley, Berkeley, CA, pgs. 33.1.1-33.1.4. Hsu et al., "Low-Frequency Noise Properties of Dynamic-Threshold (DT) MOSFET's," IEEE Electron Device 34 Letters, Vol. 20, No. 10, October 1999, pgs. 532-534. Wong, H.-S. Philip, "Field Effect Transistors – From Silicon MOSFETS to Carbon Nanotube FETs," Proc. 23<sup>rd</sup> International Conference on Microelectronics (Miel 2002), Vol. 1, NIS, Yugoslavia, 12-15 May, 2002, pgs. 103-35 107. Brown et al., "Intrinsic Fluctuations in Sub 10-nm Double-Gate MOSFETs Introduced by Discreteness of 36 Charge and Matter," IEEE Transactions on Nanotechnology, Vol. 1, No. 4, December 2002, pgs. 195-200. Denton et al., "Fully Depleted Dual-Gated Thin-Film SOI P-MOSFET's Fabricated in SOI Islands with an 37 Isolated Buried Polysilicon Backgate," IEEE Electron Device Letters, Vol. 17, No. 11, November 1996, pgs. 509-511. Doris et al., "Extreme Scaling with Ultra-Thin Si Channel MOSFETs," IBM Semiconductor Research and 38 Development Center (SRDC), Microelectronics Division, Hopewell Junction, NY 12533, pgs. 10.6.1-10.6.4. Choi et al., "Nanoscale Ultrathin Body PMOSFETs With Raised Selective Germanium Source/Drain," IEEE Electron Device Letters, Vol. 22, No. 9, September 2001, pgs. 447-448. Uchida et al., "Experimental Evidences of Quantum-Mechanical Effects on Low-field Mobility, Gate-channel 40 Capacitance, and Threshold Voltage of Ultrathin Body SOI MOSFETs," Advanced LSI Technology Laboratory, Toshiba Corp., 8 Shinsugita-cho, Isogo-ku Yokohama 235-8522, Japan, pgs. 29.4.1-29.4.4. Ren et al., "An Experimental Study on Transport Issues and Electrostatics of Ultrathin Body SOI pMOSFETs," 41 IEEE Electron Device Letters, Vol. 23, No. 10, October 2002, pgs. 609-611. Colinge et al., "Silicon-On-Insulator 'Gate-All-Around Device'," IMEC, Kapeldreef 75, 3030 Leuven, Belgium, 42 pgs. 25.4.1-25.4.4. Hergenrother et al., "50 nm Vertical Replacement-Gate (VRG) nMOSFETs with ALD HfO<sub>2</sub> and Al<sub>2</sub>O<sub>3</sub> Gate 43 Dielectrics," Agere Systems, Murray Hill, NJ 07974, USA, pgs. 3.1.1-3.1.4. Hokazono et al., "14 nm Gate Length CMOSFETs Utilizing Low Thermal Budget Process with Poly-SiGe and Ni Salicide," SoC Research & Development Center, Process & Manufacturing Engineering Center, <sup>2</sup>System LSI 44 Division, Toshiba Corporation Semiconductor Company, 8 Shinsugita-cho, Isogo-ku, Yokohama, Kanagawa 235-8522, Japan, pgs. 27.1.1-27.1.4. Schulz et al., "50-nm Vertical Sidewall Transistors With High Channel Doping Concentrations," Infineon 45 Technologies AG, Corporate Research, D-81730 Munich, Germany, pgs. 3.5.1-3.5.4. Fung et al., "Gate length scaling accelerated to 30nm regime using ultra-thin film PD-SOI Technology," IBM 46 Microelectronics Semiconductor Research and Development Center (SRDC), pgs. 29.3.1-29.3.4.

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Sheet 6 of 7 FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE ATTY, DOCKET NO. APPLICATION NO. PATENT AND TRADEMARK OFFICE (REV. 7-80) 51889/2 US 10/613,169 INFORMATION DISCLOSURE CITATION APPLICANT - Douglas R. Hackler, Sr. et al. Title: MULTI-CONFIGURABLE INDEPENDEN **MULTI-GATED MOSFET** FILING DATE-July 3, 2003 Choi et al., "Nanoscale CMOS Spacer FinFET for the Terabit Era," IEEE Electron Device Letters, Vol. 23, No. 75 1, January 2002, pgs. 25-27. Lindert et al., "Sub-60-nm Quasi-Planar FinFETs Fabricated Using a Simplified Process," IEEE Electron Device 76 Letters, Vol. 22, No. 10, October 2001, pgs. 487-489. Choi et al., "A Spacer Patterning Technology for Nanoscale CMOS," IEEE Transactions on Electron Devices, 77 Vol. 49, No. 3, March 2002, pgs. 436-441. Li et al., "Damascene W/TiN Gate MOSFETs With Improved Performance for 0.1-µm Regime," IEEE 78 Transactions on Electron Devices, Vol. 49, No. 11, November 2002, pgs. 1891-1896. Huang et al., "Sub-50 nm P-Channel FinFET," IEEE Transactions on Electron Devices, Vol. 48, No. 5, May 79 2001, pgs. 880-886. Pei et al., "FinFET Design Considerations Based on 3-D Simulation and Analytical Modeling," IEEE 80 Transactions on Electron Devices, Vol. 49, No. 8, August 2002, pgs. 1411-1419. Hisamoto et al., "FinFET—A Self-Aligned Double-Gate MOSFET Scalable to 20 nm," IEEE Transactions on 81 Electron Devices, Vol. 47, No. 12, December 2000, pgs. 2320-2325. Chang et al., "FinFET Scaling to 10nm Gate Length," Strategic Technology, Advanced Micro Devices, Inc., 82 Sunnyvale, CA 94088, USA, pgs. 10.2.1-10.2.4 Choi et al., "FinFET Process Refinements for Improved Mobility and Gate Work Function Engineering," Department of Electrical Engineering and Computer Sciences, University of California, Berkeley, CA 94720, 83 USA, pgs. 10.4.1-10.4.4. Lindert et al., "Sub-60-nm Quasi-Planar FinFETs Fabricated Using a Simplified Process," IEEE Electron Device 84 Letters, Vol. 22, No. 10, October 2001, pgs. 487-489. Huang et al., "Sub 50-nm FinFET: PMOS," Department of Electrical Engineering and Computer Sciences, 85 University of California at Berkeley, CA 94720, USA, pgs. 3.4.1-3.4.4. Choi et al., "Sub-20nm CMOS FinFET Technologies," Department of Electrical Engineering and Computer 86 Sciences, University of California, Berkeley, CA 94720, USA, pgs. 19.1.1-19.1.4. Kedzierski et al., "Metal-gate FinFET and fully-depleted SOI devices using total gate silicidation." IBM Semiconductor Research and Development Center (SRDC), Research Division, T J Watson Research Center, 87 Yorktown Heights, NY 10598, pgs. 10.1.1-10.1.4. Lin et al., "High-Performance P-Channel Schottky-Barrier SOI FinFET Featuring Self-Aligned PtSi Source/Drain and Electrical Junctions," IEEE Electron Device Letters, Vol. 24, No. 2, February 2003, pgs. 102-88 Lee et al., "Hydrogen Annealing Effect on DC and Low-Frequency Noise Characteristics in CMOS FinFETs," 89 IEEE Electron Device Letters, Vol. 24, No. 3, March 2003, pgs. 186-188. Yagishita et al., "High Performance Metal Gate MOSFETs Fabricated by CMP for 0.1 

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